Holtek 8051 e-Link Driver for Keil™ µVision User Manual

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1 Holtek 8051 e-Link Driver Instructions and Installation

The Holtek 8051 e-Link driver is an AGDI interface debug adapter driver program which can be embedded into an integrated development environment which supports an AGDI interface. It can be used to assist users with rapid development of their application programs for Holtek's 8051 series MCUs.

The HT8051OCDS-ICE is composed of an e-Link, for the HT8051OCDS, and a target board (with EV). The e-Link is a Holtek new generation OCDS structure in-circuit debug adapter which provides customers with a development tool to directly debug their application boards. An OCDS interfaced MCU is required on the application board.

As for the software, an integrated develop environment supporting the AGDI interface is necessary, such as the Keil™ µVision, to develop the Holtek's 8051 series MCU programs.

This user manual describes the way to use the e-Link Driver and the Holtek Database in the Keil™ µVision environment as well as any relevant details regarding the HT8051OCDS-ICE.

Installation

Note: The Keil™ µVision software must be installed first.

Software Installation

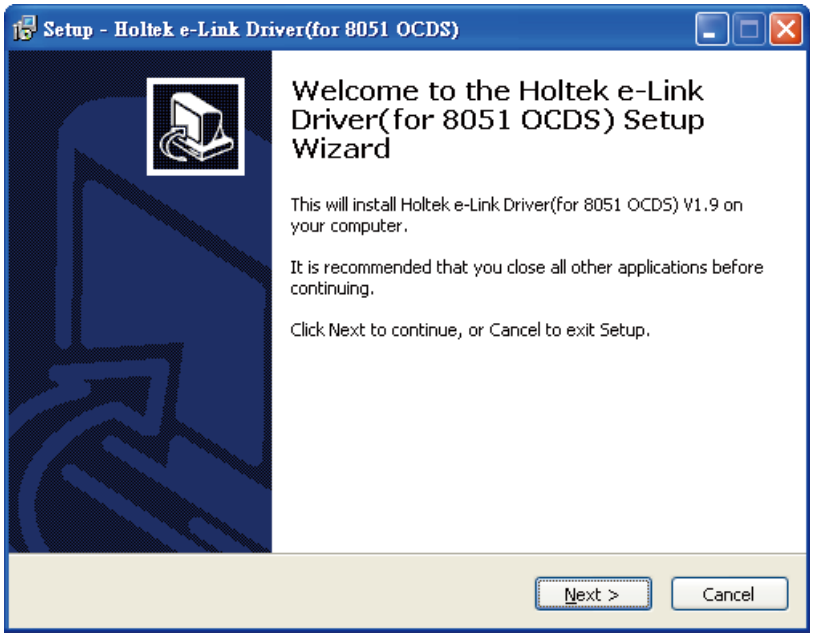
■ Step 1

Execute the AGDIDriver_Setup_V19.exe.

Note: Your software version number may be different with that in the description. It is recommended that only the latest version is used.

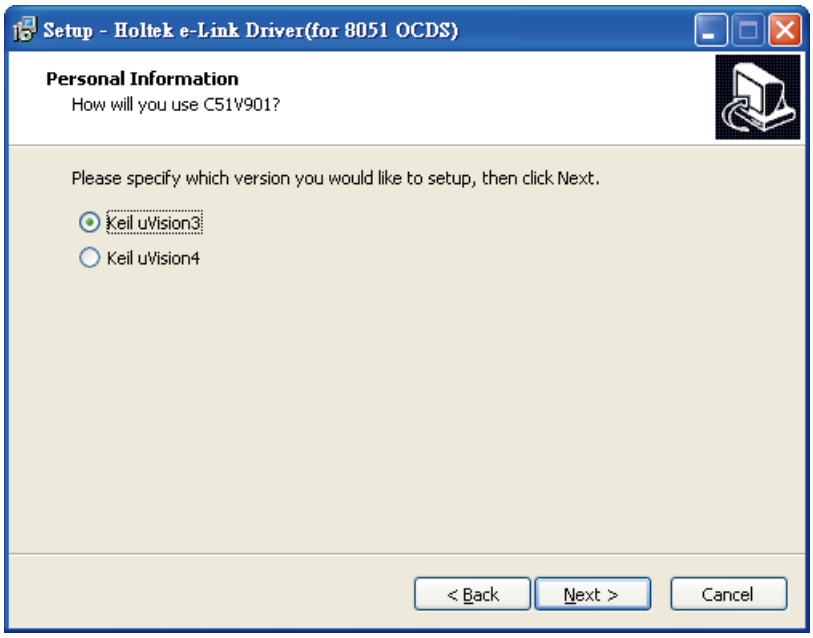
■ Step 2

Installation welcome window: press "Next" to continue or "Cancel" to exit.


Setup - Holtek e-Link Driver(for 8051 OCDS)
Welcome to the Holtek e-Link Driver(for 8051 OCDS) Setup Wizard
This will install Holtek e-Link Driver(for 8051 OCDS) V1.9 on your computer.
It is recommended that you close all other applications before continuing.
Click Next to continue, or Cancel to exit Setup.
Next >
Cancel

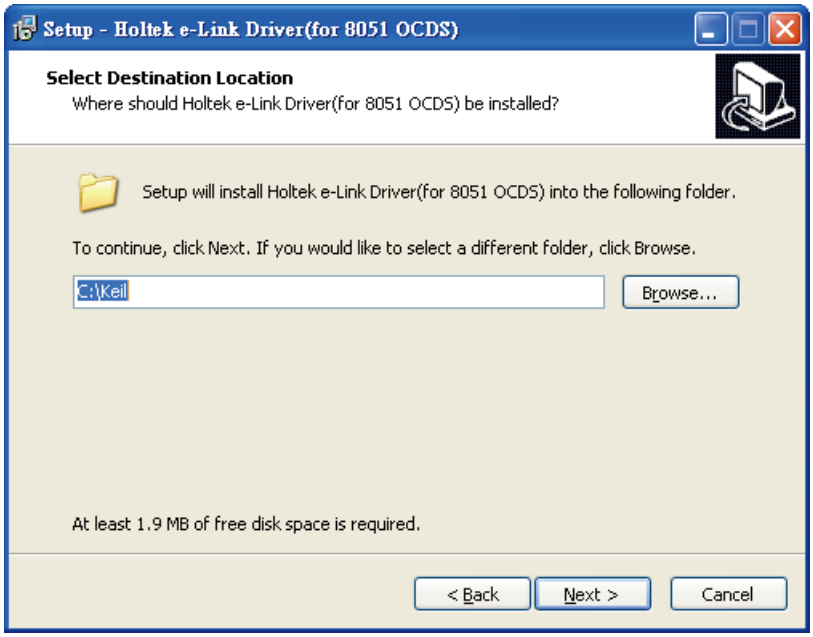
■ Step 3

Specify the installation version of the Keil™ µVision and then press "Next."


Setup - Holtek e-Link Driver(for 8051 OCDS)
Personal Information
How will you use C51V901?
Please specify which version you would like to setup, then click Next.
Keil uVision3
Keil uVision4
< Back
Next >
Cancel

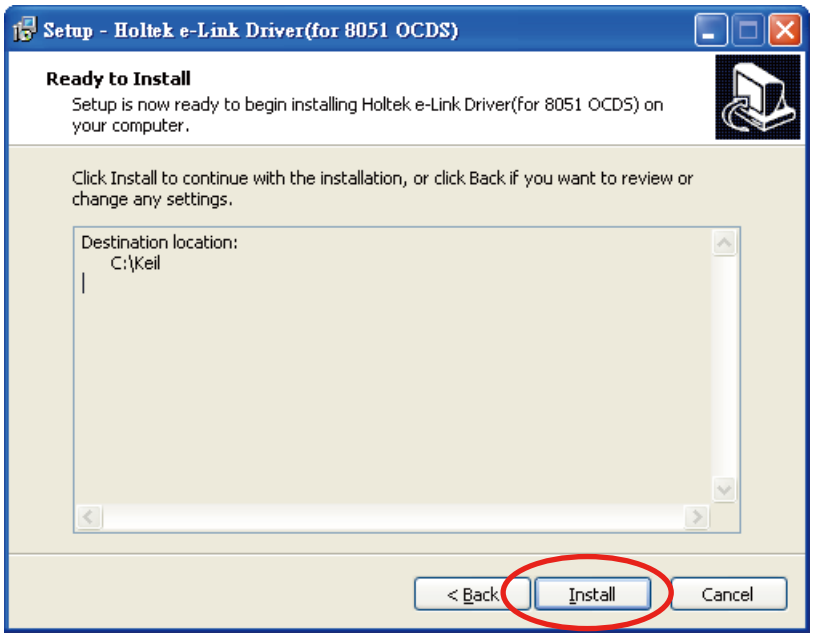
■ Step 4

Specify the installation folder for the Keil™ µVision. Make sure the specified folder is correct so that the driver program can be installed correctly. Press "Next."


Setup - Holtek e-Link Driver(for 8051 OCDS)
Select Destination Location
Where should Holtek e-Link Driver(for 8051 OCDS) be installed?
Setup will install Holtek e-Link Driver(for 8051 OCDS) into the following folder.
To continue, click Next. If you would like to select a different folder, click Browse.
C:\Keil
Browse...
At least 1.9 MB of free disk space is required.
< Back
Next >
Cancel

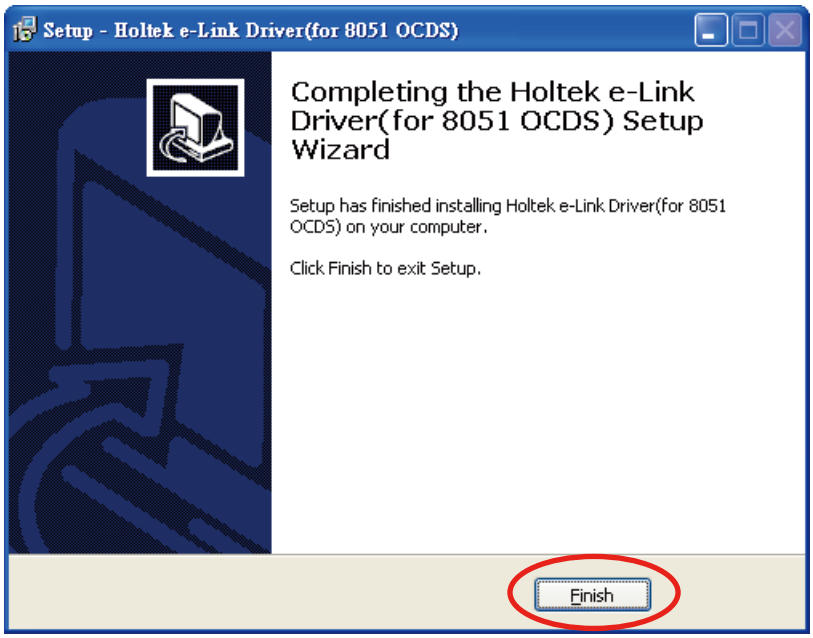
■ Step 5

After all installation details are confirmed, press "Install" to start the installation.


Setup - Holtek e-Link Driver(for 8051 OCDS)
Ready to Install
Setup is now ready to begin installing Holtek e-Link Driver(for 8051 OCDS) on your computer.
Click Install to continue with the installation, or click Back if you want to review or change any settings.
Destination location:
C:\Keil
< Back
Install
Cancel

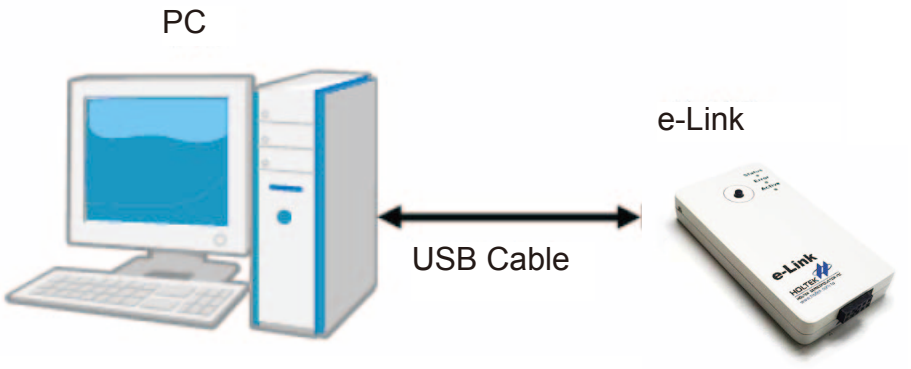
■ Step 6

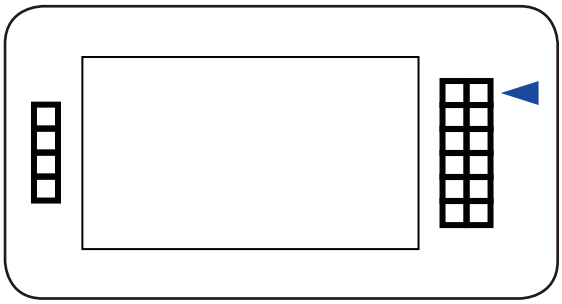
When the installation is completed, press "Finish" to complete the setup operation.


Setup - Holtek e-Link Driver(for 8051 OCDS)
Completing the Holtek e-Link Driver(for 8051 OCDS) Setup Wizard
Setup has finished installing Holtek e-Link Driver(for 8051 OCDS) on your computer.
Click Finish to exit Setup.
Finish

Hardware Requirements

Use the USB cable to connect the e-Link with a USB port on a PC.





e-Link Pin Assignment

2: -	1: VDD
4: -	3: -
6: -	5: OCDSCK
8: -	7: X
10: -	9: OCDSDA
12: -	11: GND

HT8051OCDS-ICE Composition

- The HT8051OCDS-ICE is composed of two parts:
  HT8051OCDS e-Link + Target Board (with EV) .
- HT8051OCDS e-Link:
  The e-Link is a Holtek new generation OCDS structure on-line debug adapter. When used with the AGDI interfaced program development software, users are provided with a development tool to directly debug their application boards.
- e-Link Hardware Box:

e-Link (Front)

e-Link (Side)

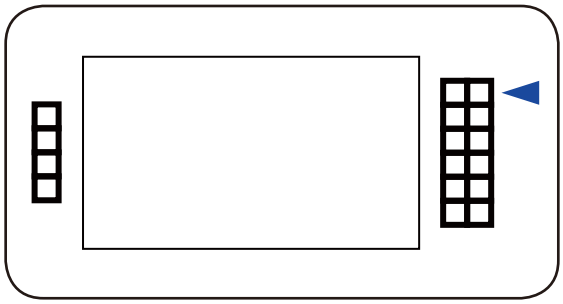
e-Link (Back)

- Target Board (with EV):
  The EV is an IC with an OCDS interface.
  During debug, the e-Link can execute a range of debug operations such as single step, full speed, halt and breakpoint setup by transmitting instructions to the EV. When it is not being used for debug purposes, the EV will function in the same way as an actual IC.

■ HT8051OCDS-ICE Hardware Connection Description

● HT8051OCDS e-Link Pin Assignment

e-Link (Back)

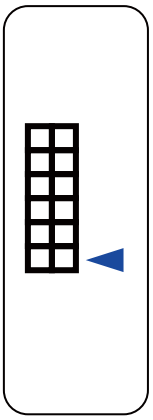


e-Link (Back)

1	Reserved
2	Reserved
3	Reserved
4	Reserved

2: -	1: VDD
4: -	3: -
6: -	5: OCDSCK
8: -	7: X
10: -	9: OCDSDA
12: -	11: GND

e-Link (Side)



e-Link (Side)

12: -	11: GND
10: -	9: OCDSDA
6: -	7: X
8: -	5: OCDSCK
4: -	3: -
2: -	1: VDD

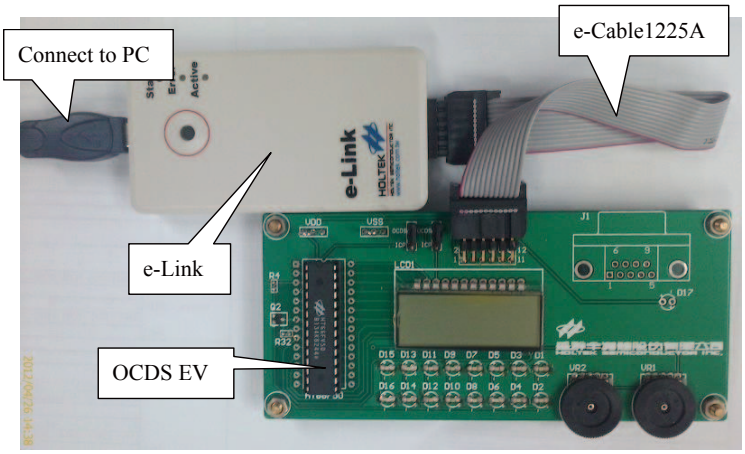
■ HT8051OCDS e-Link Pin Definitions

Name	Description	Direction
VDD	When the e-Link is used to supply power, the power is provided on this output pin.	e-Link→
	When using an external power supply, this is the e-Link input power pin.	e-Link←
OCDSCK	OCDS CLK signal during simulation	e-Link→
OCDSDA	OCDS Data signal during simulation	e-Link ↔
GND	e-Link Ground pin	e-Link ↔
Reserved	e-Link reserved pins	Unknown

■ VDD, OCDSCK, OCDSDA, GND are the necessary HT8051OCDS-ICE pins. Even if power is supplied from the target board, VDD must be the same as it is used as the e-Link output voltage reference

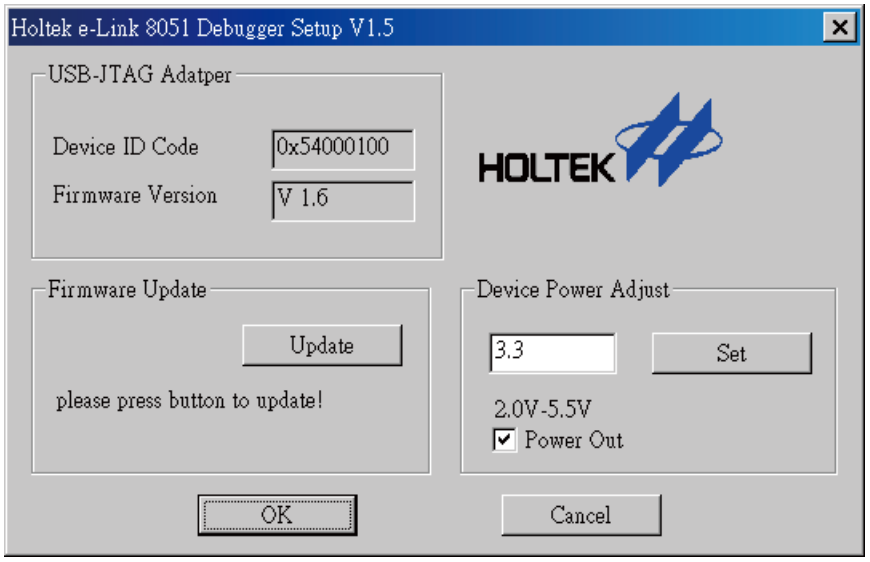
- Note that the e-Link reserved pins are not NC pins. Their voltages are at an unknown level

■ HT8051OCDS-ICE Hardware Connection Figure



■ Points to consider when using the HT8051OCDS-ICE

- Voltage and Current:
  – The operating voltage of the HT8051OCDS-ICE can be within 2.0V~5.5V



– If the Power Out box is checked then the power supply to the Target Board will be provided by the e-Link. If this item is not checked, an external power supply will be required

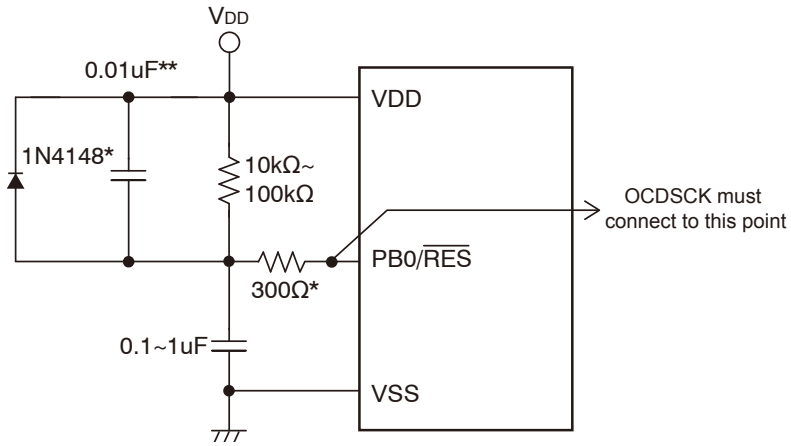
– In addition to the EV needing a VDD power supply, the other analog/digital circuit power supplies may be connected with the OCDS operation. Refer to the datasheet to see if it is to be provided by the user or to be connected with the VDD

– The maximum current for the power supply to the Target Board is 200mA. If the application board current exceeds 200mA, an external power supply must be used

– When powered by the e-Link, if the load current becomes larger, the VDD output may not be stable. It is recommended to take this into account during VDD setup

HT8051OCDS-ICE Usage Restrictions

- OCDSDA / OCDSCK are pin-shared with other functions
  1. When the e-Link is enabled, the other OCDSDA/OCDSCK shared pin function will be invalid.
  2. When the e-Link is disabled, the other OCDSDA/OCDSCK shared pin functions are normal.
- The OCDSDA/OCDSCK cable cannot be connected to a capacitor. When it is pin-shared with the reset pin, the Reset circuit should be as follows:



- When the OCDSDA is pin-shared with an I/O pin powered by the e-Link, the 6.8KΩ pull high resistor connected to the OCDSDA pin will influence the I/O voltage value. This should be taken into account when designing the I/O circuits.
- HT8051OCDS-ICE Keys and Indicators
  - Keys:
    Used to reset the HT8051OCDS-ICE.
  - Indicator LEDs
    Status: The yellow LED is used to indicate if the e-Link supplies power to the target board.
    On: Supplying power to the target board
    Off: Not supplying power to the target board
    Error: The red LED is used to indicate whether the e-Link is operating incorrectly.
    On: Error has occurred
    Off: Operating normally
    Active: The blue LED is used to indicate the e-Link activity level.
    Quick flashing: Busy
    Off: Waiting

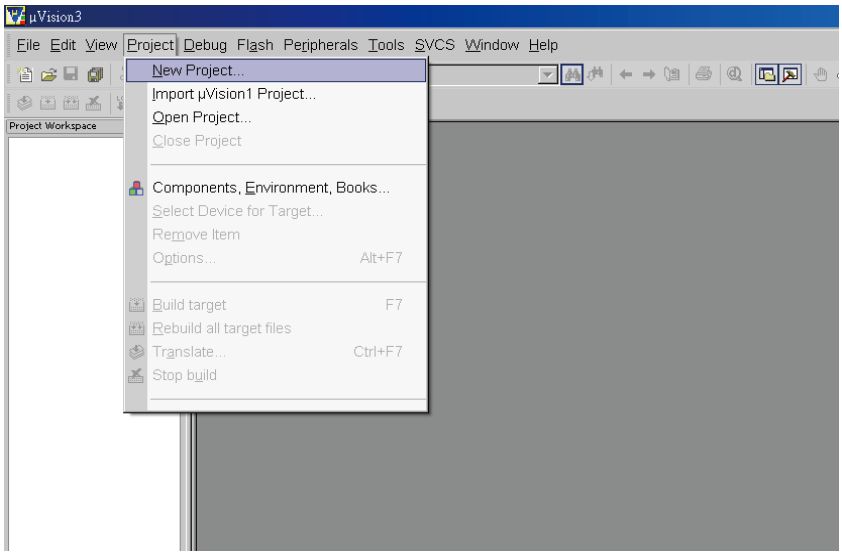
2 Operating Description

This chapter describes the way to use the e-Link Driver and Holtek Database in the Keil™ µVision environment.

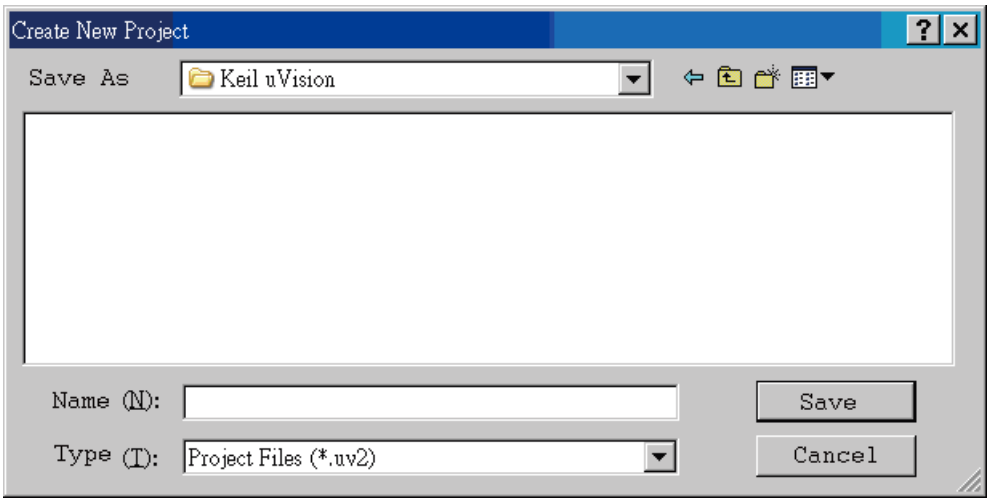
Operating Description

Project Setting

■ Stpe 1
Select “New Project” in the Project menu to open a new project.

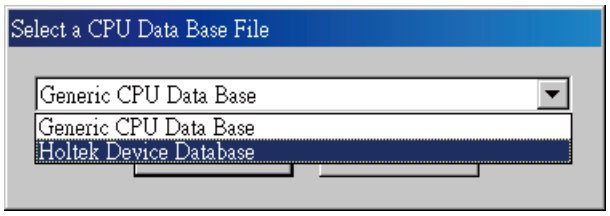


The user will be requested to input a project name after which “Save” should be pressed.



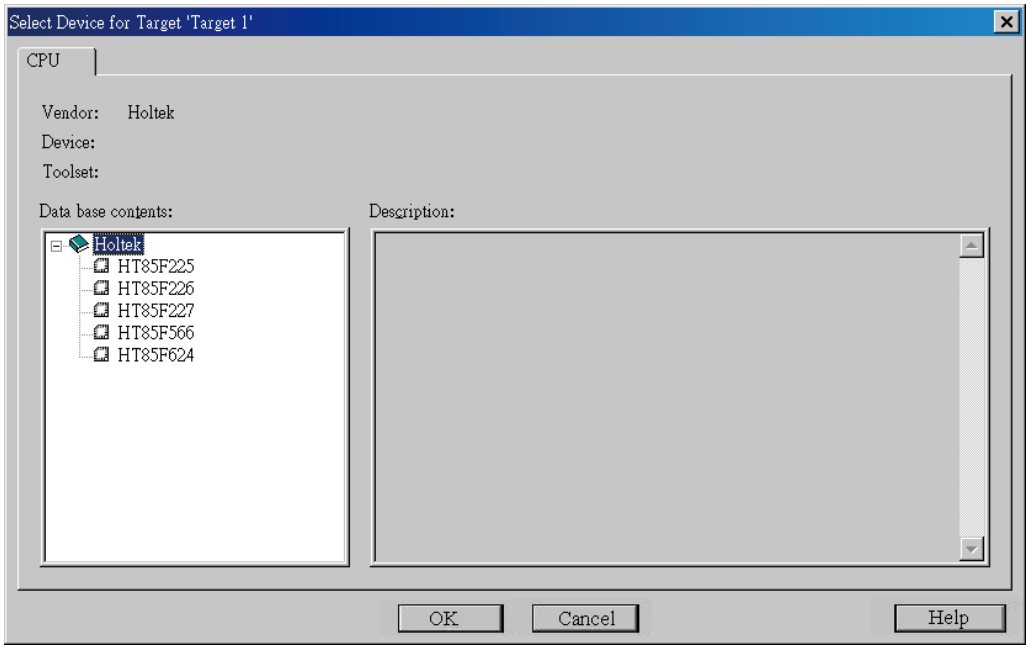
■ Stpe 2

After the Project folder has been selected, the “Select a CPU Data Base File” window will pop up. Select the “Holtek Device Database” and then press “OK.”



■ Stpe 3

Select the required MCU part number and press “OK” to complete the project setup.

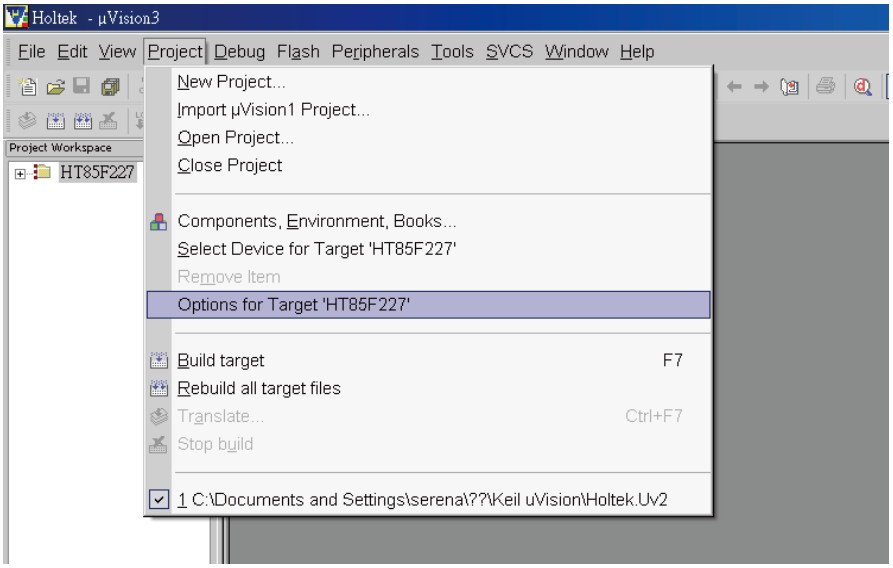


Holtek 8051 e-Link Driver Setting

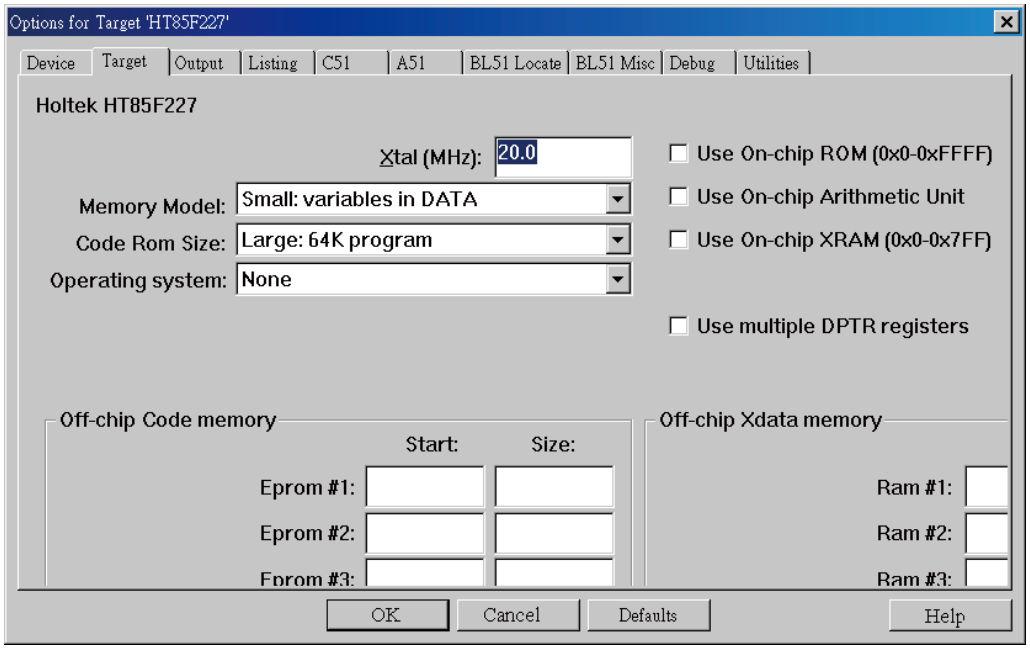
■ Stpe 1

Select the "Options for Target 'HT85F227'*" in the Project menu.

Note*: HT85F227* is the target name.

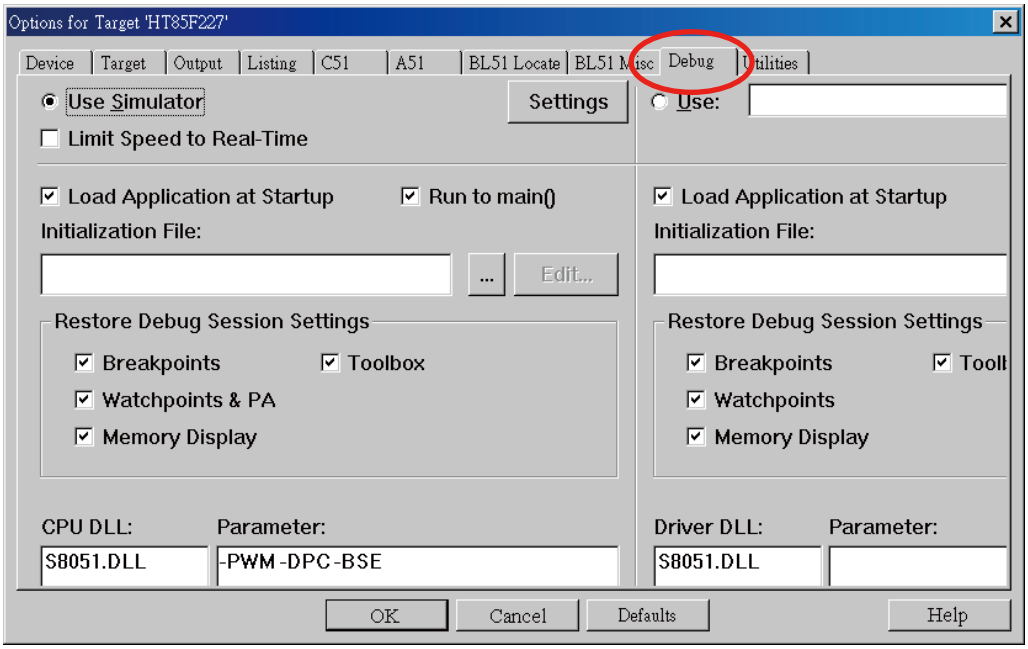


Then the following window will appear.



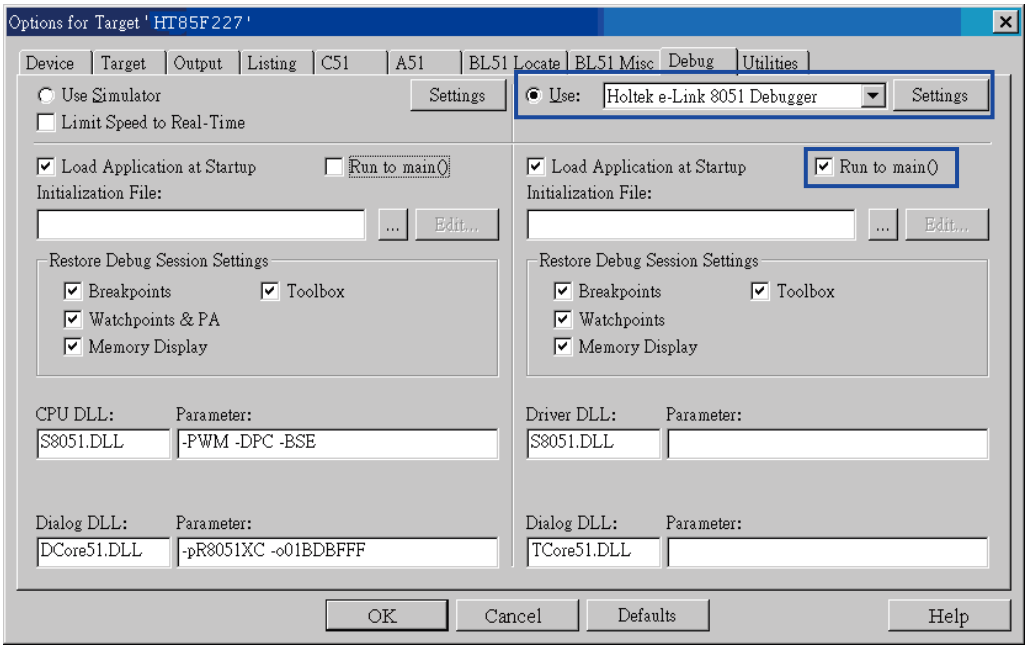
■ Stpe 2

Switch the operating interface to the Debug page.

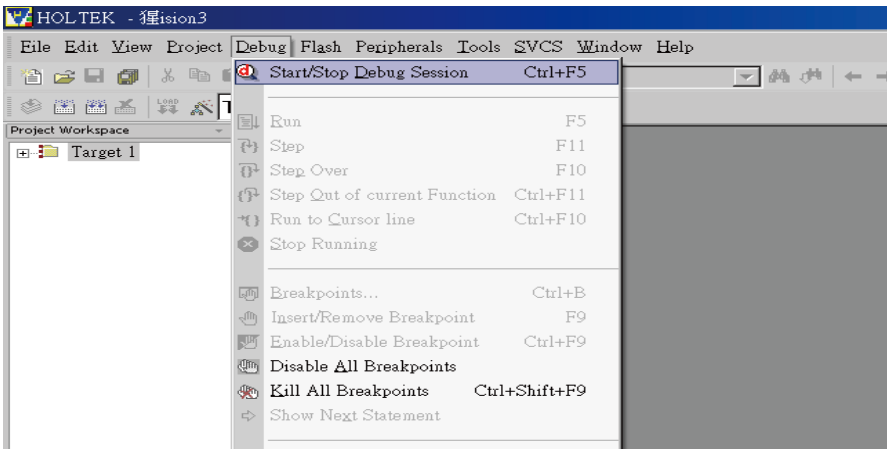


■ Stpe 3

Click the Use options in the right half page and select the “Holtek e-Link 8051 Debugger” from the menu, then press the “Settings” key on the right.

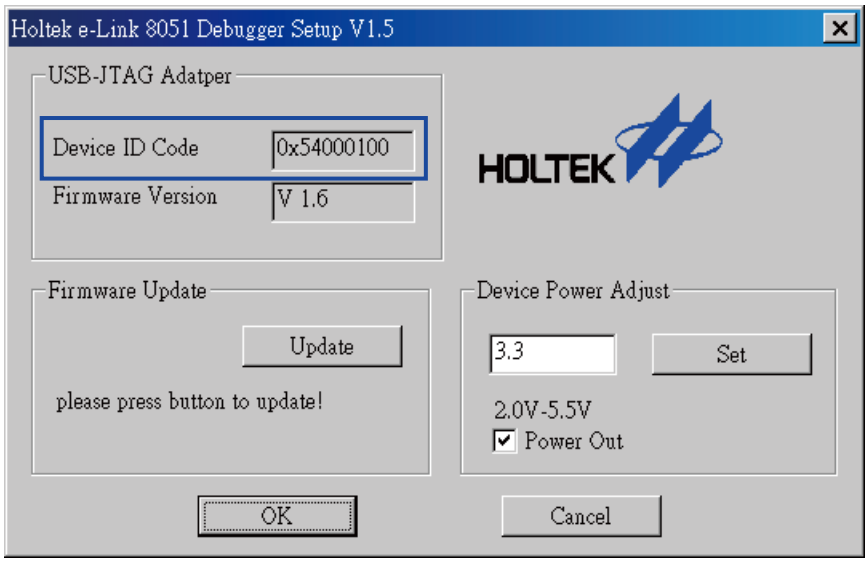


Note: If the Run to main() option in the right page is checked, after the debug operation is executed, as shown in the figure below, the program will start operating until it enters main(). If Run to main() is not selected, the program will stop at address 0 immediately after debug.



■ Stpe 4

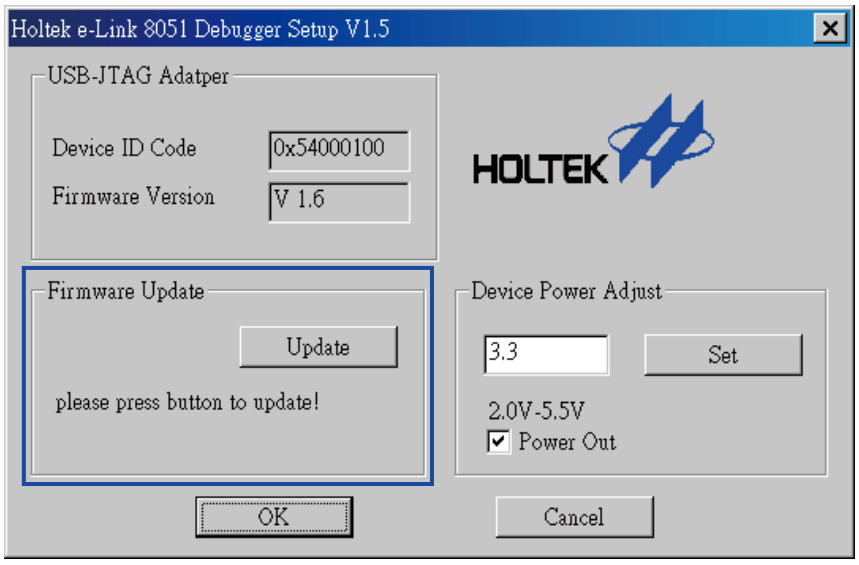
Press the “Settings” on the right side of the Holtek e-Link 8051 Debugger options and the following window will appear. Press “OK” to finish.



Note: If the Power Out box is checked, the e-Link will supply power to the target board. If this box is not checked, an external power supply will be required.

■ e-Link F/W version update

When an updated e-Link F/W version is available, this will be indicated as shown by the blue frame in the diagram. Press "Update" for an immediate F/W update.

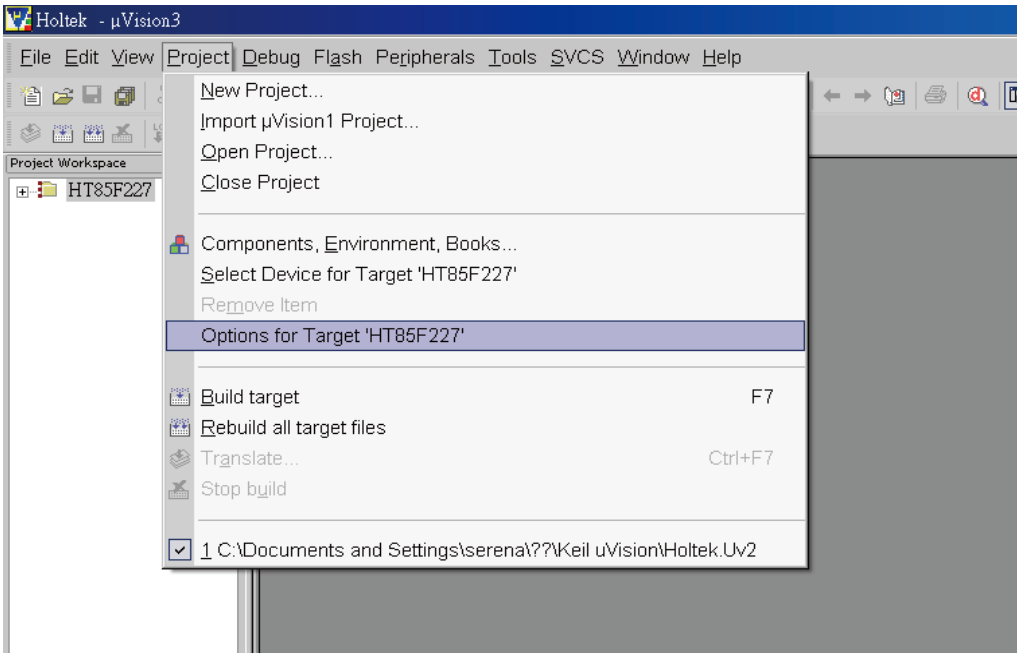


Flash Programming Driver Setting

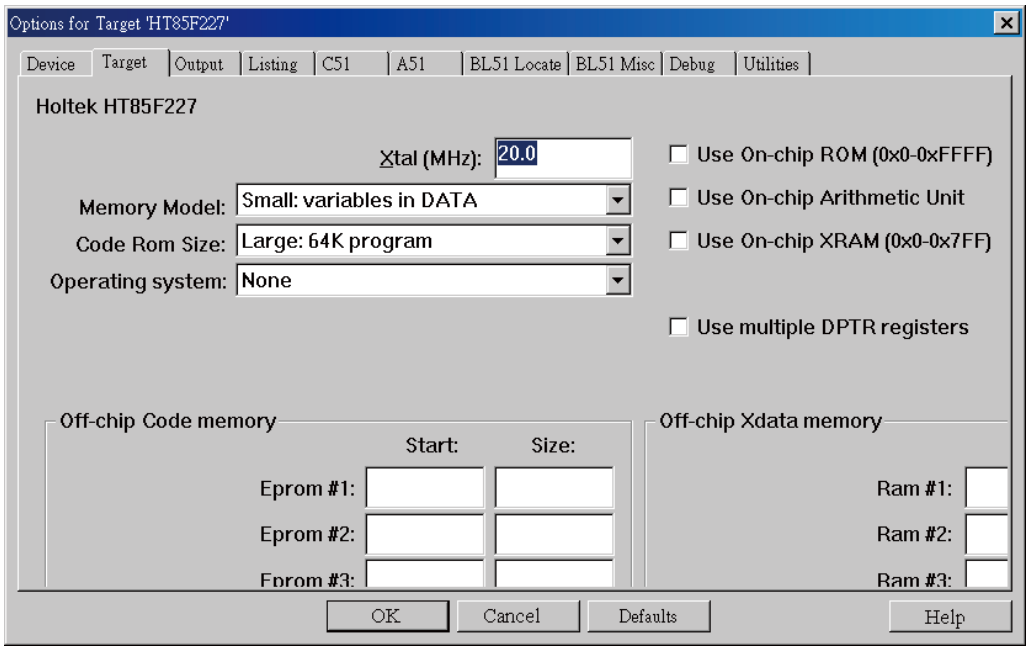
■ Stpe 1

Select the "Options for Target 'HT85F227' * " in the Project menu.

Note*: HT85F227* is the target name.

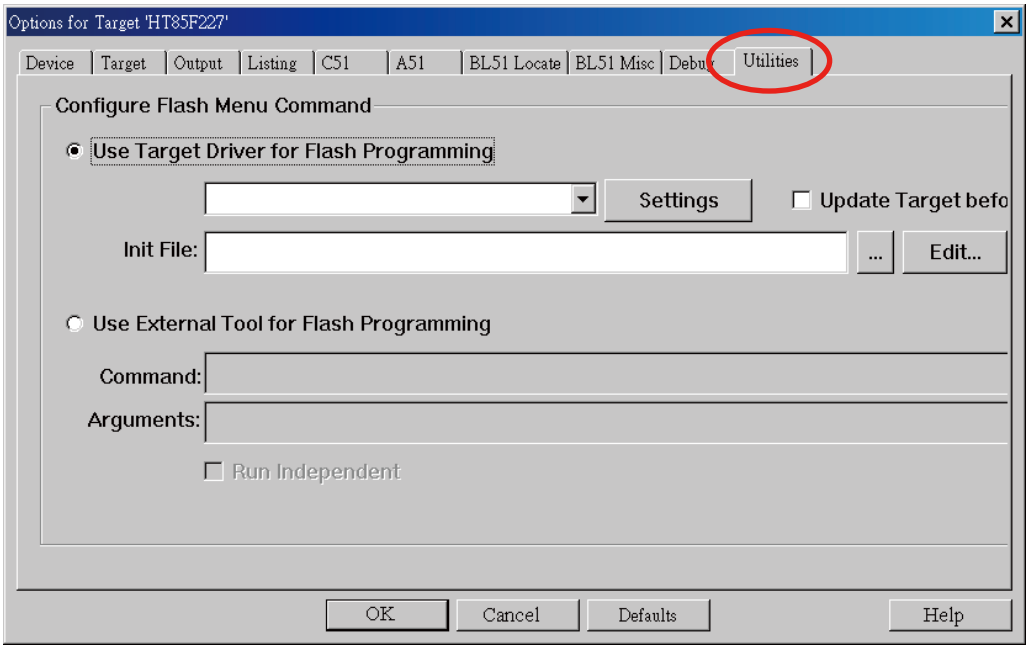


The successive operating window will appear as follows.



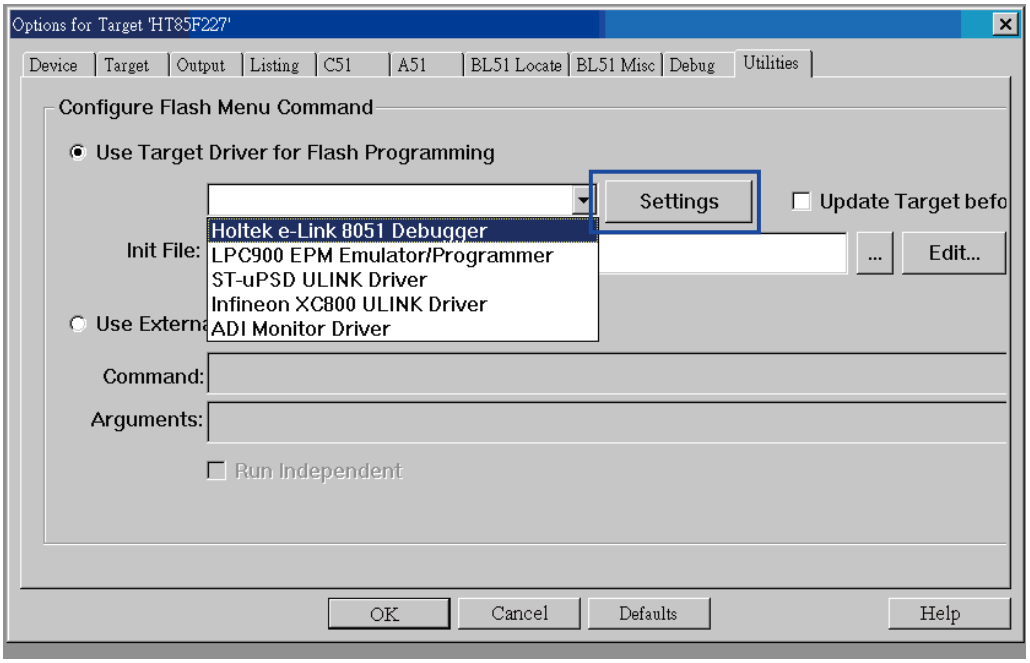
■ Stpe 2

Switch the operating interface to the Utilities Page.



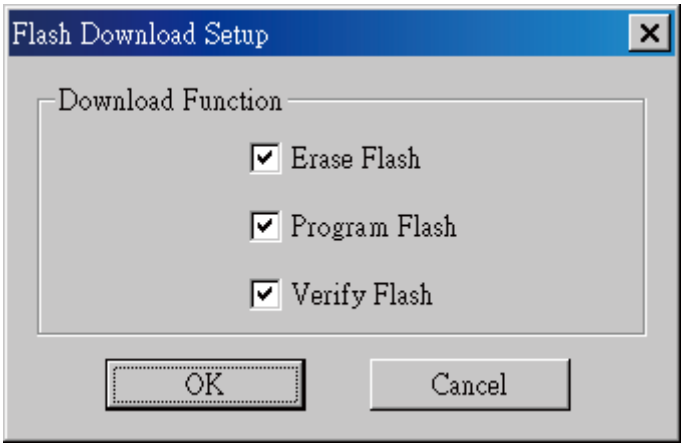
■ Stpe 3

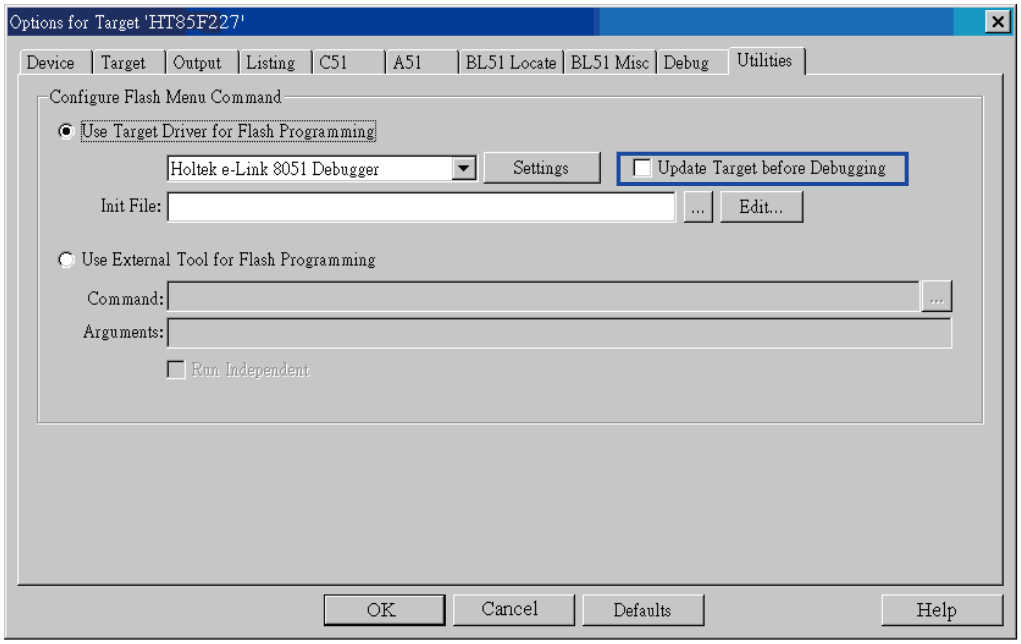
Click the "Use Target Driver for Flash Programming" option, select the "Holtek e-Link 8051 Debugger" and then press the "Settings" key.



■ Stpe 4

After pressing the "Settings" key the following operating window will appear. This is used to setup the "Download to Flash Memory"options " ". Press "OK" to finish.





Note: If the "Update Target before Debugging" option is checked, then when Debug " " is executed, the program will first be downloaded into the Flash Memory. If the program has not been modified, then it will not be downloaded whether the option is checked or not.

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